

truth in the statement, that the Great Auk (*Alca impennis*, L.) has ever occurred so far to the north; but we have since learned that the Grey Phalarope (*Phalaropus fulicarius*, Bp.) has been obtained; and it is probable that the King Duck (*Somateria spectabilis*, Leach), the Long-tailed Duck (*Harelda glacialis*, Leach), the Great Northern Diver (*Colymbus glacialis*, L.), and, in small numbers, the Common Guillemot (*Uria troile*, Lath.) may sometimes be found in Spitzbergen. With these additions, the list of the birds we saw most likely comprises all the feathered denizens of this solitary land.

XIX.—*Five Months' Birds'-nesting in the Eastern Atlas.*

By OSBERT SALVIN, Corr. Memb. Zool. Soc. (Part I.)

(Plate VI.)

As Mr. Tristram has undertaken to furnish a complete account of the birds of Algeria, in which he will enter at length into a general description of the physical geography of that country, as exercising an influence on its ornithology, I merely in this article propose, as supplementary to Mr. Tristram's more systematic details, to give a short account of those birds which actually came under my own observation during the time I accompanied that gentleman and Mr. W. H. Simpson in their rambles through the Regency of Tunis and Eastern Algeria. The five months referred to above comprised part of February, March, April, May, June, and part of July in the year 1857; and though the first five or six weeks were not actually devoted to birds'-nesting, yet the time was spent in making inquiries about breeding-localities, and preparations for our journey; so that the whole period may be said to bear reference to the one object of the expedition.

The city of Tunis was our head-quarters while in the Regency, from which we made excursions to various parts, to Carthage and Oudena in the immediate vicinity, to Sousa and El Djem in the south, and to Bizerta in the north. None of these excursions were productive of much, ornithologically speaking. Those birds that were observed will be mentioned in the subjoined list. A month was spent in this way, after which we finally started

for Kef, the principal western frontier-town in the Tunisian territory, intending to cross by that road into the province of Constantine. Though the journey between Tunis and Kef can be performed without much difficulty in three days, we, preferring easy stages to more rapid travelling, passed six on the road. Our halting-places each successive night were Medjez el Bab, Testour, Teboursouk, Dugga and Bordj Messaoud. The afternoon of the sixth day brought us to Kef. Here, thanks to our letters from Tunis, we were most hospitably entertained by the governor, till our horses, tent-equipage, &c. had been forwarded to meet us from Souk Harras, to which place Mr. Tristram had sent them on leaving the Desert to proceed to Tunis. Leaving Kef, and passing one night with the lawless frontier-tribe of Waregra, we reached Souk Harras, the most eastern military station in the French occupation. After spending a few days in reconnoitring, we pitched our tents on the 4th of April at the foot of the magnificent rocks of Djebel Dekma, our camp comprising, besides ourselves, three servants, three tents, four horses, with cooking-utensils and all the requisites for a nesting-campaign in the mountains. From Djebel Dekma we passed on to Khifan M'sakta, and from thence to Kef Laks, at which latter place we remained till the end of the month of April. The rocks and lofty precipices about Souk Harras, of which the above-mentioned form some of the principal, are the homes of the Lämmergeyer, Griffon and Egyptian Vultures, of the Golden, Tawny, and Short-toed Eagles, of the Barbary Falcon, the Common and Black Kites. The eye of any lover of ornithology would be delighted and astonished at the vast numbers of these magnificent birds of prey which all day long sail over his head, their numbers increasing in the vicinity of the rocks that hold their eyries. Many a time, when in that district I counted twenty and thirty, and on one occasion fifty-five Griffon Vultures on the wing at once, wheeling in circles and gradually extending their gyrations higher and higher till the uppermost birds were lost to sight or appeared as mere specks in the sky. Aïn Beïda, another military station which stands south-east of Constantine, in one of those elevated plains into which the Algerian Atlas expands itself, and which with their numberless

salt lakes form, so marked a characteristic of the range, was our next resting-place, from which we gradually felt, as it were, our way westward to Djendeli. In this neighbourhood we passed the remainder of the month of May, our final camp, in June, being situated on the borders of a small marsh which lies to the westward of the high road between Constantine and Batna. On quitting this spot, we proceeded to Constantine, and thence to Philippeville, after having parted with our horses, tents, and every disposable thing. At Philippeville we took the coasting steamer to Algiers, and bid a final adieu to North Africa on the 11th of July.

The following observations are taken from notes made with reference to the specimens shot and the eggs collected during the expedition, and are given, with a few exceptions, nearly as I have them written.

1. GYPAËTUS BARBATUS. (The Lämmergeyer.)

The first opportunity I had of observing this finest of birds was in the neighbourhood of Souk Harras in the first week in April. In a ramble in search of a spot for our encampment, we discovered an eyrie in one of the stupendous cliffs that characterize that district. It was quite inaccessible; and we had to bear our disappointment, as well as a good wetting, and return to the hotel (if the house where we put up may be designated by such a title) after an almost fruitless day. We were not then aware that the eggs of this species had long been hatched. On encamping at Djebel Dekma on the 4th of April, more frequent opportunities were afforded us of becoming acquainted with this bird. This mass of precipitous rocks is one of the most interesting and curious in the country. The strata form an angle of about 20° with the vertical, and, dipping towards the north, present a comparatively flat face with bushes and shrubs growing out of the interstices. The southern cliff is more broken and the strata much more horizontal. Towards the east these two parallel precipices dwindle to nothing, while westward they are abruptly terminated by another broken precipice which cuts the first two at right angles. In the centre of this group, and at its highest point, the whole mass is parted, leaving a rugged

gorge running north and south, having towering rocks on each side. The formation seemed to be almost entirely composed of nummulite. In this range a pair of Lämmergeyer had their eyrie in the western side of the gorge just above a cave that pierces the strata. To this nest one of our Arab servants, Mohamed, climbed and brought down a half-fledged young one, which, after living some few days, came to an untimely end*.

The range at Khifan M'sakta, our next camp, stretches south-west and north-east, and, though hardly on so grand a scale as Djebel Dekma, is somewhat similar in its peculiar isolation, the same feature of vertical strata presenting itself. A pair of Lämmergeyer also occupied these rocks, their nest being in a hole on the north-west side. At Kef Laks, in the precipices called by the Arabs "Gala el Hamara," was another eyrie. None of the stories of the Lämmergeyer defending its young against one so hardy as to assail its nest were ever realized during our stay in their localities; and though their eyries were repeatedly scaled and their young taken, the old birds not only never offered an attack, but in all cases either kept at a respectful distance, or never showed themselves at all. Immature birds of this species seldom occur in the breeding-haunts of the old ones: I only saw one during my whole stay. This remark probably applies to all the birds of prey; and its truth is especially illustrated in the case of the Egyptian Vulture (*Neophron percnopterus*), immature birds of which I hardly ever saw. It would appear that this bird, like the *Gyps fulvus*, seldom, if ever, lays more than one egg: no instance of more than one young ever occurred in the nests visited. The food of the Lämmergeyer consists principally of the Land-tortoises (*Testudo mauritanica*), which abound throughout the country. These it carries to some height in the air, and lets fall on a stone to break the shell. It is an early breeder. The eggs must be laid in January, or the beginning of February at latest, as in the early part of April the young, in every case that came under our observation, had been hatched at least a month. I cannot concur in the supposition, suggested by the reviewer of Mr. Bree's "Birds of Europe," in the last Number of 'The Ibis,' "that the rich tawny hue of the under surface in

* This bird is now in the Norwich Museum.

some individuals of the Lämmergeyer is probably owing to a stain, the effect of bathing in muddy water, or of rolling in the sand with wet plumage." That such a cause should produce such an effect is not very obvious; and even if it were so, one can hardly, by such a hypothesis, account for the colours being distributed *only* on the under surface and lighter portions of the plumage; one would expect that the rolling process would extend some of its influence to the darker portions also. All the mature birds I saw wore a deep shade of this rich colouring. The young of this species, on first leaving the egg, is covered with down of a sooty-brown colour. A blood-red band which encircles the eye shows conspicuously when the bird is alarmed. The iris itself is in the first instance dark.

The Arabic name applied to the Lämmergeyer in Eastern Algeria is "*Boulachiah*."

2. GYPS FULVUS. (Griffon Vulture.)

I have, since my return, felt rather surprised that we never met with the Griffon Vulture in the Regency of Tunis: the rocks about Kef, from which the town takes its name, would appear admirably adapted for the nests of this bird. But none were seen; nor was it till we reached Souk Harras that they first showed themselves, though I have since suspected that the greater part of a large number of birds of prey, observed soaring at a considerable distance near Sidi Yousef, on the Tunisian frontier, were of this species. At Djebel Dekma were several pairs, as also at Khifan M'sakta; but Kef Laks and its neighbourhood seem to be their head-quarters. The term Kef Laks is strictly applied to a cliff which faces the east, and is a singularly bold and marked feature in the country. This eastern cliff forms one side of an elevated platform, the other sides being also precipitous rocks of no mean height. The northern of these is the most extensive; and it was there that the greater part of the Griffon Vultures built their nests. These rocks are called "*Gala el Hamara*" and "*Kef Gh'tar*" by the Arabs. The former seemed a favourite locality; and every available ledge was occupied. Facing this rock is a point which stands boldly out from the main cliff, to the extre-

mity of which I used often to climb to watch the proceedings opposite. One of these ledges is accessible to a good climber; and Mohamed, our servant, who possessed hands, feet, and head which I have never seen surpassed for such dangerous exploits, performed the feat. A much-damaged egg, from which the young one had emerged, was the result; all the other nests contained young. It is a fine sight to watch the ease with which the Griffon sails through the air: the apparently effortless extension of the wings seems amply sufficient to sustain its huge body; no flapping motion is necessary to enable it to mount to a great height. It is only on leaving a rock that a few strokes are requisite to attain the necessary impulse, after which, with primaries bent upward by the force of the air, it performs its stately evolutions by soaring only. In alighting, the bird drops its legs some distance from the rock, and, sailing to within a few yards, it checks its velocity by two or three heavy strokes of the wing.

It has always been a mystery to me where so many Raptorial birds procure sufficient food. But few bleached skeletons are to be seen; and on no occasion did I see a bird feeding. The old birds, though doubtless themselves capable of sustaining hunger for a long period, must traverse many miles of country to procure the more regular supply requisite for their young. In one instance only did we find an egg and a young one in the same nest; in all other cases, one egg or one young one was the invariable number. The eggs appear to be laid in the month of February, as most of the nests contained young in the beginning of April. During the time of incubation, one of the parent birds sits constantly, and if frightened off, returns immediately. The nest is composed almost entirely of sticks, which are used in greater or less abundance, as the situation requires. The eggs obtained from wild birds generally show indications of natural colouring, in addition to the blood and dirt with which they are usually stained. This colouring is dispersed in faint spots of a reddish hue, sometimes all over the egg, but generally at the larger or smaller end. Of the four eggs in my collections, three exhibit traces of this marking. The eggs usually placed in collections are laid by birds kept in confinement; and this

colouring is not observable. The young of the Griffon Vulture, on emerging from the egg, is covered with white down; the sides are dark. This bird is known among the Arabs as the "*Nisser*."

3. NEOPHRON PERCNOPTERUS. (Egyptian Vulture.)

Though at first sight this bird would appear to be hardly so numerous as the preceding species, yet its distribution is so much more extensive, that I am inclined to consider it as more abundant. It is to be seen usually in pairs; and wherever a cliff exists in the mountains that surround the table-lands of the Eastern Atlas, sure enough it will be occupied by a pair. It was about the 20th of March, when, riding from Tunis to Bizerta, I first saw this species, after which this bird and the Black Kite (*Milvus ater*) were our constant companions throughout our stay. Generally speaking, the nests of *N. percnopterus* are not so inaccessible as those of *Gyps fulvus*. One nest which I visited near Kef Laks, and from which an Arab had taken the egg and broken it, I could reach with my hand from a perfectly accessible ledge. This nest was in a crevice of the rock, and was composed entirely of small sticks.

The Arabs used to take the eggs of this bird for us whenever and wherever they found them, so that I am unable to speak with certainty of the average number laid by one bird; but I think that two is the usual complement. In some instances the bird would lay again in the nest from which her first egg had been abstracted. One nest at Khifan M'sakta contained three eggs. The Egyptian Vulture begins to lay about the 10th or 12th of April. I quite concur in Mr. E. C. Taylor's remarks (*Ibis*, No. 1, p. 42) respecting the irides and tarsi of the adult of this species; they agree with my own observations. The Arabs are well acquainted with this bird, and call it *Rachma*, the adult being distinguished as "*Rachma batha*," or White *Rachma*.

4. AQUILA CHRYSÆTUS. (Golden Eagle.)

The title of the Golden Eagle to be considered as the King of Birds is fully confirmed in the Atlas. Whatever rock a pair may choose for their eyrie, there they reign alone in dignified

solitude, nor do they allow a single Vulture, Kite, or indeed any other species of rapacious bird, to occupy with their nest a single spot in the same rock, however eligible for the purpose; nor are these other species ever to be seen in the haunts of their exclusive majesties. The whole southern precipice at Djebel Dekma was thus tenanted by a single pair of this Eagle, as also several other rocks that came under our notice. The eggs are laid in March, and are for the most part two in number, though, in some cases, no more than one occurred. The eggs taken in this district are many of them richly marked; but the spots appear to be more isolated than is observable in many Scotch specimens. Instances of the Golden Eagle building in trees were by no means of unfrequent occurrence.

The Arabic name of this bird is "*Hogarb kakala*," or "Black Eagle."

5. *AQUILA NÆVIA*. (Spotted Eagle.)

Owing to the great similarity that subsists between this bird and *A. navioides*, I refrain from quoting doubtful instances of the occurrence of either. It was at Djebel Dekma only, that a pair were certainly recognized. These we used frequently to see flying round and about the northern cliff. I do not think that this is a species by any means numerous in the Eastern Atlas. We had a nestling Eagle for some time in our camp, which we used to suppose to be the young of this species; but I do not feel at all sure that such was the case. Unfortunately it was killed by an accident.

The Arabs apply the name of "*Hogarb*" to this and the following species.

6. *AQUILA NÆVIOIDES*. (Tawny Eagle.)

I several times had opportunities of observing a pair of these birds about a cliff which faces the south in the vicinity of Kef Laks. About the fourth week in April I discovered the nest, to which I sent Mohamed, but without result; the eggs had not been deposited. At Djendeli, in the Salt Lake district, I obtained a specimen. This bird, the skin of which I have still, seemed to have missed its moult, as the plumage was very much faded. So light-coloured is it, that it may bear comparison

with the figure of *Aquila belisarius* given in Levaillant's 'Exploration Scientifique d'Algérie,' which, there is no doubt, is referable to this species. A few of the darker feathers of the fresh moult just show themselves. On dissection, the sex was not to be traced. While staying at the same place, a young bird just beginning to change its down for feathers was brought to us. This we took from place to place, and eventually deposited in the Gardens of the Zoological Society of London, where it may now be seen.

7. *AQUILA BONELLI*. (Bonelli's Eagle.)

While staying at Sousa, in the Regency of Tunis, in February, an immature bird of this species was brought to me by an Arab, half-dead. We saw others in the Regency, where it appeared to be more numerous than further to the westward. In the Souk Harras district I did not meet with it, except on one occasion, when I found a decaying specimen laying on a heap of rubbish opposite the door of the hotel of that town. A pair frequent, and, according to an informant at Tunis, annually breed near the ruins of Utica; one of these birds I saw when visiting the site of that city.

8. *AQUILA PENNATA*. (Booted Eagle.)

On several occasions I observed a pair of these Eagles about the rock of "Gala el Hamara;" but though I kept a sharp look-out for the nest, I never could discover it. About Djebel Dekma I more than once saw the Booted Eagle; and indeed during our whole stay in the Souk Harras district, birds of this species were occasionally observed.

9. *CIRCAËTUS GALLICUS*. (Short-toed Eagle.)

The first time I met with this species was just on entering the Arab village of Testour, between Tunis and Kef. One flew over my head, and, coming between me and the sun, threw a shadow which attracted my attention. I brought it down by a lucky shot without dismounting from my horse. A few days afterwards another was killed. The Short-toed Eagle was observed on many occasions in all the districts visited, but is perhaps more numerous about Souk Harras than elsewhere.

The first nest of this species we obtained was brought from Blad el Elma, a village to the south of Djebel Dekma; it contained two eggs, both which had been incubated some time, so that the long bare tarsi and large eyes of the embryo left little doubt as to the identity of the species. Of these eggs one had slight indications of colouring, a feature I have never observed in other specimens. The eggs are usually deposited in March; but some birds defer laying till April. The Arabs call this bird the "White Eagle"—"*Hogarab abiad*."

10. *PANDION HALIAËTUS*. (Osprey.)

In the lagoon of El Baheira, a number of posts are fixed to direct the boats that ply between Tunis and La Goletta. These are the favourite perches of several Ospreys, which during the winter months fish in the lagoon, and retire to these posts to feed on and digest their prey. While at Bona, I saw one bird flying along the sea-coast.

11. *BUTEO TACHARDUS*. *Buteo cirtensis*, Levaill., jun. (The African Buzzard.)

This species is by no means common in the district where other rapacious birds so abound. I have but few instances of its occurrence noted. One of these was at Khifan M'sakta, where a pair had their nest. On another occasion I saw two in a rocky pass near Ras el Alia. Subsequently Mr. Simpson shot one near the salt lake of Guerah el Tharf. The eggs, as might be expected, differ immaterially from those of the Common Buzzard (*Buteo vulgaris*).

12. *MILVUS REGALIS*. (Common Kite.)

For the most part, we found the nests of the Kite were much dispersed; I have no instance noted of more than a pair occupying one cliff. When in a rock, they were usually placed where a small tree or shrub grew out of a crack. Such was the case at Djebel Dekma, Khifan M'sakta, and Kef Laks, with a single exception. In this case the nest was in a hole in the precipice that forms the western termination of Djebel Dekma. The young in this nest were hatched in the first week in April. About the Ouled Zeid country, north of Souk Harras, the nests were usually in trees. Nearly all the eggs we obtained were

remarkably devoid of colouring. The Arabs call this bird "*Hadayia hamara*," or the "Red Hadayia."

13. *MILVUS ATER*. (Black Kite.)

During the breeding-season this species is much more abundant in the Souk Harras district than *M. regalis*. Indeed, with the single exception of the Kestrel (*Tinnunculus alaudarius*), it is the commonest rapacious bird in the Eastern Atlas. I never saw *M. ægyptiacus*. This latter appears to be a more southern species; and a very distinct line of demarcation might probably be drawn between the territories of these two near allies. Like the preceding, it selects for the position of its nest the roots of a shrub growing out of a rock, and builds a structure composed principally of sticks, with a lining of rags, wool, &c., while on the surrounding branches are fantastically hung old pieces of burnouses of various colours. I have also seen nests of the Common Kite decorated in this curious fashion. The Black Kite plays the part of scavenger in the districts where it abounds; and over every French settlement and Arab village several may be seen flying boldly round, on the look-out for any fragment of carrion that may be lying about. Its fearless and familiar manner and beautiful flight render this bird decidedly one of the most interesting in the country. The eggs are laid from the middle to the end of April, and are more distinctly and deeply marked than those of the other species. A series of the eggs of the two from the same district, placed side by side, present a marked contrast. This bird is known to the Arabs by the name "*Hadayia söda*"—the "Black Hadayia."

14. *ELANUS MELANOPTERUS*. (Black-shouldered Kite.)

On two occasions, among the Tamarisk trees, near where the Chemora empties itself into the Lake of Djendeli, I saw a bird which I had little hesitation in considering as of this species.

15. *FALCO BARBARUS*. (Barbary Falcon.) (Plate VI.)

There cannot be much doubt that the small Peregrine of the Atlas, the *Falco punicus* of General Levaillant, is in truth the "Barbary Falcon" of the old writers on Hawking, the foundation of the *F. barbarus* of Linnæus, Gmelin and Latham, though this latter name has generally been supposed to be a synonym



$\frac{1}{3}$.

of *F. peregrinus*, auct. Messrs. F. H. Salvin and W. Brodrick, in their 'Falconry in the British Isles,' have given a good figure (plate xvii.) of an immature tiercel or male bird; and they justly remark (p. 101) that, "although smaller by nearly a fourth than the [true] Peregrine, it has the organs of destruction, such as the beak, feet, and talons, fully as large, united to longer and more pointed wings in proportion to its total length—in this respect almost rivalling the Hobby." The same authors quote from an old work, 'The Gentleman's Recreation' [1677], page 208, the following:—

"The Barbary or, as some call her, the Tartaret Faulcon, is a bird seldom found in any country, and is called a Passenger as well as the Haggard [*F. peregrinus*]. They are somewhat lesser than the Tiercel-gentle [*F. peregrinus*, ♂], and plumed red under the wings, strong-armed, with long talons and stretchers.

"The Barbary Faulcon is venturously bold, and you may fly her with the Haggard all May and June. They are Hawks very slack in mewing at first; but when once they begin, they mew their feathers very fast.

"They are called Barbary Faulcons because they make their passage through that country and Tunis, where they are more frequently taken than in any other place, namely in the Isles of the Levant, Candy, Cyprus, and Rhodes."

Messrs. Salvin and Brodrick go on to observe, of the subject of their plate, "The specimen in our possession is that of a young male, and was killed by an acquaintance in the country from which it takes its name. Its length is under 13 inches from the beak to the end of the tail; length of wing from shoulder to tip 11 inches, with the bill, legs, and feet equal in size to those of the male Peregrine. The young female is scarcely to be distinguished from the young male Peregrine, except by the greater development of these organs of destruction, which equal those of the Falcon. The cere in the young bird is blue, and the legs yellow,—similar in this respect also to the Peregrine."

It may be that M. Temminck's description of his *Falco peregrinoides* (Pl. Col. livr. 81) was taken from one of these birds; if so, he has confounded this species with the real *F. peregrinoides* of Sir Andrew Smith—a South African form,—as well as with

the true *F. lanarius* of Dr. Schlegel, an adult male of which the figure (Pl. Col. 479) very much resembles.

It is probable that the geographical range of this beautiful miniature Peregrine is extremely limited; the Atlas, however, appears to be its focus. In the Museum at Norwich is an immature specimen, said to come from Western Africa, where, however, if it occurs, it is most likely only as a straggler. Mr. J. H. Gurney has had three living birds of this species, all nestlings brought from Algeria,—two by Mr. Tristram, in 1856, and one by Mr. Simpson and myself, in 1857. One of them made its escape last autumn; but the other two are still at Catton, and seem to be in good health. They all three, as is usual with the true Falcons, moulted into the adult plumage when about fifteen months old. Of European localities for this bird, it would seem, from the concluding sentence in the extract above given from the 'Gentleman's Recreation,' that it has been taken in Crete, as well as in the Asiatic islands of Cyprus and Rhodes*. It is very possible that it may not be uncommon in Spain, especially the interior of the country; and it is pretty sure to occur accidentally at Gibraltar, where a good look-out should be kept for it. Its small stature, powerful feet and claws, and its ruddy under-plumage, will prevent its being taken for the common Peregrine by any one to whom these peculiarities are known.

The rediscovery, if it may be so called, of this bird, is another most interesting proof of the extreme accuracy of the old writers on Falconry; of which the determination of the true Lanner (*F. lanarius*, Schl.), and the separation from it and other allied species of the Saker (*F. sacer*, Schl.), are notable instances. In these two latter cases the judgment of Dr. Schlegel is not likely to be

* The late Mr. W. B. Barker, in his work on Cilicia, says that the Peregrine of Mount Taurus is known as the "Barbary Falcon" ("Lares and Penates," p. 297). Now if, as the old writer above quoted says, it is really found in Rhodes and Cyprus, this may be the case; but, at the same time, it is perhaps more probable that the bird mentioned by Mr. Barker is the true Lanner (*F. lanarius*, Schl.), of the existence of which he does not seem to have been aware, since the species he calls the Lanner is the Saker (*F. sacer*, Gm.), as was proved by a living bird he presented to the Zoological Society.

reversed; and the distinctness of the Barbary Falcon from the Peregrine, which has long been and still is a tradition among falconers, will probably be as much confirmed by future researches as that opinion.

My own experience of this bird was entirely confined to the Eastern Atlas, where in some districts it is by no means uncommon. I had many opportunities of watching the birds, and was present at the siege of three of their eyries, besides discovering others which were inaccessible. The first of these nests was in a hole in the eastern portion of the rock of Djebel Dekma. To this nest, for a long time Mohamed obstinately refused to ascend; it was his first experience in rope-climbing. Two dollars, however, produced the desired effect; and after five hours' hard work, during which we had to employ every available foot of cord, even to our tent-lines, we were rewarded with three eggs. While the siege was going on, I shot one of the old birds. A few feet from the nest of the Lämmergeyer in Khifan M'sakta was another nest. From this we took on the 9th of April four eggs just ready to hatch. The parent birds I watched for some time as they flew anxiously round, but did not shoot one. On the 20th of April an Arab reported that he had found a nest of "*Bournee*" in Kef Boudjato, a rock situated no great distance from Kef Laks. I immediately started to the spot, taking with me Mohamed, my gun, and ropes. A successful siege was the result; and I returned to the tents with three eggs and one of the parent birds. The measurement of an egg from each of these three nests I subjoin. The Barbary Falcon brought to England by us (mentioned above as now in Mr. Gurney's possession) was procured from a rock near the Marabout of Sidi Khalifa Cherif, on the northern boundary of the extensive plain that holds the salt lake of Guerah El Tharf. Bil Ghazoum, our interpreter, and Mohamed, our climber, took it and another from the same nest about the 8th of May. They had then almost assumed their feathers. Between these two birds there subsisted a marked difference in size; and the smaller of the two had, in addition to the rufous marking at the back of the neck, a light-coloured reddish head. We kept them about two months, during which time they came to their

full feather, the same inequality in size subsisting between the two. They were, doubtless, male and female. Unfortunately the male died during the journey between Marseilles and Paris, and we had no means at hand for preserving it. The female is now at Catton. From this female it would appear that all Mr. Gurney's birds were females, as all corresponded in size; and I am also led to the conclusion that the two skins I possess, from one of which the accompanying figure is taken, are also females, as Mr. Gurney kindly compared them with his living examples, and in point of size they presented no appreciable difference. I mention this, as my two skins are marked male and female; but I was evidently mistaken in one or other, as both are as nearly as possible the same size, or, if anything, the one marked male is the larger of the two. From the stomach of both these specimens I took examples of a large species of *Entozoon*, but unfortunately did not preserve them. I am indebted to Mr. Alfred Newton for the quotations which I have given above respecting this bird, and also for the probable references which I subjoin:—

Accipiter falco tuncetanus, *Briss.* Orn. i. p. 343 (1763).

Falco barbarus, *Linn.* Syst. Nat. p. 125 (1766).—*Gmel.* Syst. Nat. p. 272 (1789).—*Lath.* Ind. Orn. p. 33 (1790); *Syn. i.* p. 72 (1781); *Gen. Hist. B. i.* p. 82 B (1829).

Falco alphanet, *Schl.* Tr. sur la Fauconnerie.

Falco punicus, *Levaill. jun.*, Exploration Scientifique d'Algérie.

Gennaja barbarus, *Bonap.* Cat. Ois. d'Eur. et de l'Alg. (1856).

Barbary Faulcon, *Gentl. Recr.* p. 208 (1677).

Barbary Falcon, *Albin*, Nat. Hist. B. iii. pl. 2 (1738).—*F. H. Salvin and Brodrick*, Falconry, p. 101, pl. 17. (Av. hornot.)

The Barbary Falcon is well known to the Arabs as "*Bournee*." The measurements of the eggs referred to above are:

- | | | | | |
|------|-----------|-----------------|--------------|------------------|
| (1.) | Axis . . | 1 in. 11 lines. | Diameter . . | 1 in. 7.5 lines. |
| (2.) | " . . 1 " | 10.5 " | " . . 1 " | 6 " |
| (3.) | " . . 2 " | 0.5 " | " . . 1 " | 6.75 " |

In point of colouring they appear subject to the same varieties as the Common Peregrine (*Falco peregrinus*).

The measurements of my two skins are, in inches and decimals :

(1.) Whole length 13·0 ; wing 11·25 ; tail 5·75 ; tarsus 1·60 ; bill from gape 0·95.

(2.) Whole length 13·5 ; wing 11·0 ; tail 5·0 ; tarsus 1·7 ; bill from gape 1·0.

From this last bird Mr. Wolf's drawing is taken.

16. HYPOTRIORCHIS ELEONORÆ. (Eleonora's Falcon.)

On two successive mornings I had the gratification of observing this species. We were encamped on the banks of the Chemora, on the south side of the hills that skirt the southern shore of Lake Djendeli. On the 27th of May I had been out to collect specimens of the Alpine Swift (*Cypselus melba*), many of which I had seen flying over the plain, and was returning to breakfast, when one of four hawks which I had previously been watching with some curiosity (not knowing what they were) came over my head, and fell to a discharge of dust-shot. It proved to be a splendid female of *H. eleonoræ*, in full adult dress. The following morning I saw one about the same spot, but failed to get a shot. It would appear that this bird is a late breeder, as the eggs in the ovary were not at all forward, and the perfect state of the feathers showed that no eggs had been incubated. The plumage of this specimen retained, for some time, a peculiar smell, possibly owing to the nature of its food, which, though I neglected to examine at the time, I conjecture to have consisted principally of *Coleoptera*. Of the colouring of the fleshy parts of this specimen I have the following note :—Bill blue at the base, black at the tip ; cere yellowish-blue ; legs yellow ; claws black ; eyelid yellow ; irides dark brown.

The Zoological Gardens at Marseilles, when I visited them in July 1857, contained three birds marked *F. eleonoræ*. They were in the Hobby plumage, and apparently nestlings that had just assumed their feathers.

17. TINNUNCULUS ALAUDARIUS. (Common Kestrel.)

The Kestrel is very abundant throughout the Eastern Atlas,

breeding in cliffs and Roman remains of sufficient height. When I visited El Djem, in the Regency of Tunis, in February, I found the ruined amphitheatre tenanted by about twenty pairs. They are said to reside and to build their nests in the most inaccessible ledges of the structure. This amphitheatre is perhaps one of the finest Roman remains in the country, but is, I fear, destined to last no lengthened period; for, besides the ravages of time, the ruthless Arabs daily hasten its downfall by pulling out the stones, to employ them in the construction of their miserable hovels. Strange to say, we never obtained a single egg of this species.

18. *CIRCUS ÆRUGINOSUS*. (Marsh Harrier.)

About the middle of May a violent hailstorm passed over us while we were encamped at Ain Djendeli. The hailstones were of such a size, that the trees were stripped of their foliage, and many birds, even ducks, were killed. The day following, a Marsh Harrier, half-dead, was brought to our tents by an Arab, having, doubtless, been reduced to that state by exposure to the fury of the storm. It rallied a little on being taken into the tent, but died shortly afterwards. I have no other instance noted of our having met with this bird.

19. *ATHENE NUMIDA*. *Strix numida*, Levaillant, Exploration Scientifique d'Algérie, Ois. pl. 4. (Algerian Little Owl.)

This close ally of the Little Owl (*A. noctua*), if, indeed, it is really distinct, we found generally distributed, but nowhere abundant in the districts visited. While staying at Djendeli, we obtained, towards the end of May, two nests, from off the eggs of one of which the bird had been caught. In the olive-groves about Tunis, this bird may frequently be met with. In this neighbourhood also it is said to breed, choosing for the position of its nest the wells and old Roman cisterns which so abound throughout the district.

20. *SCOPS ZORCA*. (Scops-eared Owl.)

In the Djendeli district we found this Owl abundant; every night its peculiar cry might be heard from one or more individuals. Several birds were brought to us by the Arabs, which had been caught on their nests. One of these, whose wing had

been injured, we kept for some days in the tents; but after a time it disappeared, having probably hopped off in the night. Many of the Arabs are very skilful in catching birds; Larks (*Alauda*), Owls (*Athene* and *Scops*), Rollers (*Coracias*), and now and then a Little Bustard (*Otis tetrax*) were brought to us. I am not aware that they employ other means than the burnous in effecting their object. This they hold extended with both hands, when, after having kicked their shoes off, that they may tread more quietly, they endeavour to envelope bird, nest, and eggs in the universal garment. The cry of the Scops-eared Owl is admirably expressed by the Arabic name "*Marouf*."

[To be continued.]

XX.—*On the Breeding of the Crane (Grus cinerea) in Lapland.*

By JOHN WOLLEY, jun.

IN common with, I believe, most people interested in such matters, I was long entirely in ignorance as to the condition in which the young Crane (*Grus cinerea*) would be found on first leaving the egg, whether helpless like a young heron, or able to run about like the young of most waders and of gallinaceous birds. The late Prince Charles Bonaparte had inclined to think they would long continue nestlings; Mr. Gould, as he assured me, had always opposed the probability of this opinion.

It was on the 15th June, 1853, that I entered the marsh which the well-known Pastor Læstadius had told me was the most northern limit in Lapland of the breeding of the Crane. It is in Swedish territory, being on the west side of the frontier river, opposite the Finnish (Russian) village of Yli Muonioniska, in about lat. 68°, that is, some distance within the Arctic Circle. This great marsh, called "*Iso uoma*," is mostly composed of soft bog, in which, unless where the Bog-bean grows, one generally sinks up to the knees, or even to the middle; but it is intersected by long strips of firmer bog-earth, slightly raised above the general level, and bearing creeping shrubs, principally of sallow and dwarf birch, mixed in places with *Ledum palustre*, *Vaccinium uliginosum*, *Andromeda polifolia*, *Rubus chamaemorus*, besides grasses, *carices*, mosses, and other plants. There were